
Message control and protocols

The envelope used for messages between the Meridian 1 and the PMS is ASCII-encoded control characters listed in [Table 4](#) (<STX>, <ETX> <ACK>, and <NAK>). In addition, each message block is terminated with a <BCC> character. The <BCC> is used to maintain message integrity and is an “exclusive or” of all bytes following the <STX>, including the <ETX>.

The general message format is listed below:

STX (message body) ETX BCC

The <BCC> follows the <ETX> character in the transmission, and the receiver immediately verifies the message. If the <BCC> is correct, the receiver responds with an <ACK>. If the <BCC> does not match, the receiver responds with <NAK>.

Table 4
Message control and special characters

Character	Hex code	Definition
STX	02	Start of Text: Message body follows.
ETX	03	End of Text: End of message body.
BCC		Block Check Character
ACK	06	ACKnowledge: Affirmative response from the receiver to the sender. If BCC is used, ACK also indicates BCC check matches.
NAK	15	Not Acknowledged: Negative response from the receiver to the sender of a block of data received with errors; requires retransmission.

Message protocols

Software protocols have been implemented to supply a method of flow control across the data link. The PMS computer is given priority, and the responsibilities of the system and the PMS have been defined.

Meridian 1 protocol

The following sections list the transmitting and receiving requirements for the Meridian 1 protocol:

Transmitting requirements

- The Meridian 1 must calculate a <BCC> for each message, and transmit it as a terminating character.
- Prior to X11 Release 19, when the Meridian 1 transmitted a message to the PMS, it would ignore any <ACK> or <NAK> received from the PMS and would not attempt to retransmit the message. Instead, the Meridian 1 could transmit a new message to the PMS immediately following the previous message, without any gap in transmission.

With X11 Release 19 and later, when the Meridian 1 transmits a message to the PMS, it no longer ignores an <ACK> or <NAK> received from the PMS, but waits for a specified interval (defined on a system basis) for the PMS to respond before sending the next message.

Receiving requirements

- When the Meridian 1 receives a message from the PMS, a <BCC> for the received characters following the <STX> and including the <ETX> will be calculated and compared with the received <BCC>. If the BCCs match, an <ACK> is sent to the PMS. If the BCCs do not match, a <NAK> is sent to the PMS.

The <ACK> or <NAK>, sent back to the PMS, will follow any message that is currently being transmitted by the Meridian 1, such as a room cleaning status message.

PMS protocol

The PMS can operate using three slightly different protocols:

- PMS1
The first PMS protocol is the standard interface and default value.
- Format 2 (Format B)
The second protocol allowed requires a carriage return (<CR>) to recognize the input message.
- Format 3 (Format C)
The third protocol allows for any updated RMS message sent to be followed by the old room status whenever a room DN checks in or checks out.

Within all three types, it is recommended that the PMS adhere to the following protocol requirements:

Transmitting requirements

- The PMS must calculate a <BCC> for each message and transmit it as a terminating character.

All messages transmitted by the PMS should be “single room” commands. The PMS may run into timing and flow-control problems if you use “multiple” room commands.

- After transmitting a message, the PMS must wait for the Meridian 1 to acknowledge receipt of the message within a predefined period of time.

The recommended period of time for the message acknowledgment timer is 2 seconds.

If the PMS receives an <ACK> from the Meridian 1 before the acknowledgment timer expires, the PMS can transmit the next message immediately. That is, the PMS does not have to wait for the acknowledgment timer to expire before transmitting the next message.

If the PMS receives a <NAK> from the Meridian 1 before the acknowledgment timer expires, the PMS can retransmit the same message immediately. That is, the PMS does not have to wait for the acknowledgment timer to expire before retransmitting the next message.

After three retransmission attempts, however, the PMS should take the following actions:

- Flag the problem to hotel personnel so that the usual corrective action can be taken.

Note: The usual corrective action for most problems would involve the determination of the exact cause of failure, the correction of the problem, and a database swap to resynchronize the system.

- Store the message in an error file, and then send the next message.

- **If the PMS does not receive an <ACK> or <NAK>** from the Meridian 1 before the acknowledgment timer expires, the PMS should assume that the message was lost and should retransmit the same message. The PMS should continue to retransmit the same message until the Meridian 1 acknowledges receipt of that message.

The PMS should queue all other messages for the Meridian 1. If the PMS queue fills up, messages may be lost and a database swap will be required to recover the lost messages. If PMSI messages are lost, the PMS should flag the problem for the hotel personnel.

Note: Some vendors using the PMS protocol may want to follow an earlier strategy of allowing only three transmission attempts, after which the message is stored in a PMS error file and the next message is transmitted. The new strategy described above is designed to facilitate recovery from short-link outages.

- The PMS should send an <ACK> or <NAK> upon receiving a message from the Meridian 1.

Prior to X11 Release 19, it was not necessary to send these characters in response to PMSI messages, because the Meridian 1 did not retransmit a <NAK> message and did not wait for a response before transmitting the next message.

With X11 Release 19 and later, it is strongly recommended that the PMS send <ACK> and <NAK> responses, because the Meridian 1 now has the capability to retransmit messages.

In addition to message retransmission, X11 Release 19 introduces a polling functionality to test the status of the PMSI link. The polling message may not be recognized by the PMS. However, it is strongly recommended that the PMS treat the polling message as a standard Meridian 1 message by responding with an <ACK> upon receiving the message in its correct form.

Note: It is required that <ACK> and <NAK> characters be sent only between message packets. That is, if the PMS is in the middle of sending a message to the Meridian 1, it must finish sending the complete message before sending an <ACK> or <NAK> back to the Meridian 1.

Receiving requirements

- When the PMS receives a message from the Meridian 1, it is recommended that the <BCC> of the messages received be checked internally by the PMS and an <ACK> or <NAK> be sent back to the Meridian 1.
- It is recommended that any error detected be stored in an error file.

Note: The PMS must not send any error response to the Meridian 1 about a received message, such as “Invalid command” or “Syntax error”.